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BETWEEN E-GOVERNANCE AND SOCIAL PARTICIPATION

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Laboratory of Land Use Mobility and Environment
DICEA - Department of Civil, Architectural and Environmental Engineering
University of Naples "Federico II"
Piazzale Tecchio, 80
80125 Naples
web: www.tema.unina.it
e-mail: redazione.tema@unina.it

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RESIDENTIAL LOCATION PREFERENCES

THE SIGNIFICANCE OF SOCIO-CULTURAL
AND RELIGIOUS ATTRIBUTES

G.K. SINNIHA^a, M.Z. SHAHI^b, G. VIGAR^c, P.T. ADITJANDRA^d

^a and ^b Department of Urban and Regional Planning, Universiti Teknologi Malaysia
e-mail: sgobi@utm.my, b-zaly@utm.my

^c School of Architecture, Planning and Landscape, Newcastle University

^d New-Rail-Centre for Railway Research, Newcastle University
e-mail: geoff.vigar@newcastle.ac.uk^c, paulus.aditjandra@ncl.ac.uk^d

ABSTRACT

The objective of this paper is to explore residential location preferences and how they are related to travel behavior.

The literature focuses on the preferences in relation to physical and demographic aspects, such as land uses, facilities, transportation facilities, transportation services, car ownership, income, household size and travel accessibility.

However, this study suggests social and cultural issue such as racial diversity which is literally to be a significance context. The case study reported here is based on Iskandar Malaysia's development region.

Reliability Analysis and Factor Analysis are applied to determine that religious and culture are influential in terms of residential location preferences. These findings add a different perspective on travel behavior studies, which are heavily dominated by researches from Western Europe, North America and Australasia.

It is suggested that transport researchers need to reject universal conclusions and be clearer about the contexts in which their findings most applied and in multi-cultural scenarios to consider cultural and religious factors more extensively.

KEYWORDS:

Residential Location Preferences; Travel Behavior; Religious and Cultural Factor

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择居偏好

社会文化与宗教影响

G.K. SINNIHA^A, M.Z. SHAHI^B, G. VIGAR^C, P.T. ADITJANDRA^D

^a and ^b Department of Urban and Regional Planning, Universiti Teknologi Malaysia
e-mail: sgobi@utm.my, b-zaly@utm.my

^c School of Architecture, Planning and Landscape, Newcastle University

^d New-Rail-Centre for Railway Research, Newcastle University
e-mail: geoff.vigar@newcastle.ac.uk^c, paulus.aditjandra@ncl.ac.uk^d

摘要

本文旨在探讨择居偏好及其与出行方式之间的关系。学界专注与物质环境及人口统计学相关的偏好，譬如土地使用、设施、交通设施、交通服务、汽车拥有状况、收入、家庭规模以及出行的便利程度。然而，本研究表明，种族多样性等社会与文化因素也是非常重要的背景环境。文中案例以马来西亚依斯干达发展区为依据，综合采用可靠性分析以及因子分析来确定宗教与文化因素对择居偏好的影响。出行方式研究一直为西欧、北美和大洋洲所主导，文本的发现为该研究开拓了新的视角。本文建议，交通研究人员应该拒斥普遍性的结论，更加明确成果适用的环境，并在多元文化环境下，更广泛地考虑文化与宗教因素。

关键词

择居偏好，出行习惯，宗教因素，建成环境

1 INTRODUCTION

Residential location preferences studies are a focus of attempts to change the travel behavior, to shorten trips by private vehicles and potentially changing mode of transportation. Recognizing the potential of people's preferences, land use and transportation policy will be driven into the new perspective in which policy makers will need to understand the people's needs before proposing any policies. Susilo et al., (2012) explained that in order to propose solution for transportation-related matters, understanding on people's preferences should not be framed solely with physical characteristics, but the inclusion of social aspects will add significance effects on people decision.

During the past two decades, the literature has shown that urban form characteristics, such as density, settlement size, land-use mix, accessibility and local streets lay out are cumulatively affecting attitudes towards residential location preferences and travel behavior alongside socio-demographic characteristics, housing location and job location (e.g. Aditjandra, 2012). However, many researchers failed to include the socio-cultural and religious characteristics as potential factors that may influence people's decision in residential location preferences and travel behavior.

Furthermore, research by Susilo and Dijst (2009) and Susilo and behavior Waygood (2012) explained that although land use characteristics have some significance in explaining travel behavior, individual's attitude are often more strongly associated with travel behavior than land use policies or others physical oriented policies. Nevertheless, despite identifying these links, there have not been many studies which have developed a comprehensive framework to address connections between this built environment characteristics and travel behavior, taking into account of the fact that individuals may self-select a residential location with specific neighborhood characteristics. Schenier (2010) in his research about social inequalities in travel behavior has highlighted that findings on the social needs on trip distance are very limited. Therefore, this study provides a comprehensive framework to enhance the relationships between residential location preferences and its relation to travel behavior.

2 LITERATURE REVIEW

There are many studies that focus on physical characteristics in residential location preferences and travel behavior. Very less consideration was given to social aspects and therefore many researches have revisited the issues of residential location preferences. The argument by Handy et al., (2005) is that understanding on the built environment should be expanded to gather social needs and preferences as this has to be given fair consideration in order to change travel behavior. This section briefly summarizes some of the relevant literature on built environment and travel behavior as well as its relation to residential location preferences. For more comprehensive reviews, see Handy et al. (2005), Van Acker and Witlox (2005), Susilo et al., (2012) and Aditjandra (2012).

2.1 TRENDS IN TRANSPORTATION SOLUTION

Implementation of solutions based on urban form and structure are usually the focus of policy to solve transportation problems (Abrahamse et al., 2009). Alongside this, in condition of fast urban growth scenarios, supply-side initiative is needed. Building new infrastructures are common in many countries in addressing transportation solution, especially in developing country like Malaysia. Handy (2005), however, questioned on impact, where by, new transportation investments have on development patterns and eventually, effect on travel patterns though. Since the early of 1990s, such studies have appeared with increasing frequency. In response of the studies, many researchers began to examine the effect of specific

characteristics of the built environment on travel behavior at a disaggregate level as an effort to test the hypothesis that shape the built environment that can be used to reduce automobile travel (Handy, 2005). Overtime, however, many countries are facing uncertainty, where past trends not a reliable guide to better future. Many sections of road heavily congested for most of the time and eventually, raise concerns on environmental impacts from traffic, way to reduce usage of cars and increase public transportation. The concern starts to shift on the ways in which people organize their lives, especially where to live (Mahmassani, 2002). However, this does not provide enough evidence to understand people travel behavior (Susilo, et al., 2012). In the past, there appeared to be a mentality of 'transport is here to serve' (Lyon, 2004). In more recent times, the custodian of the transport system is being forced into recognizing that transport does not merely serve society, instead it shapes society, as in turn society shapes transport.

2.2 RESIDENTIAL LOCATION AND TRAVEL BEHAVIOR

Over the past decade, there has been growing interest in integrating land use planning and transportation. Based on Hensher (2001), land use does not only influence transportation outcome, but the transportation investments also influences the land use decision, potentially undermining the benefits of capacity expansion aimed at relieving urban congestion problems. Most of the findings and literature are centered on the topic of residential self-selection, where households and individuals locate themselves to support their travel preferences.

Changes in travel behavior may derive from the influence in land use, especially to encourage people to walk or cycling to their destinations. In respond to that, Donaghy et al., (2005) have examined the motives and needs that drive decision have been made, which lead to response behavior over space and time. In comparative studies in Europe and North America, difference in travel and mobility may take the form of income, network densities, transport technologies and social trends. According to Stern and Richardson (2005), there are issues concerning long-term versus short-term decision making, where by socio-economic determinants and cultural differences are among the issues concerned.

Cram (2005) has further confirmed in his research on residential location and work travel. The researcher explained that one of the reasons for the increase in distance travelled is the growth of long-distance work journeys. This leads people to choose the housing location based on the accessibility- basis to a potential workplace rather than to one particular workplace. Besides that, Curtis (1996) since then explained that the value of housing is a factor which results in people "trading-off" the cost of living nearer to workplace against the cost of a longer work journey. Table 1 below explains different perspective on land use and transport as follows:

PERSPECTIVES	LAND USE AND TRANSPORTATION
Human activities and purposes	-Human activities and purposes are the ultimate drivers for land use, transport and their planning
Costs and benefits	- Destination activities (land uses) are associated with benefits - Travel is primarily associated with costs
Network	- The separation and distribution of people, activities and land uses gives rise to need for travel - Land uses are represented by zones - Transport network represented by nodes and links

Land value, location and accessibility	<ul style="list-style-type: none"> - Land uses influenced by location and land value - Transport creates a web of accessibility that stimulates and supports value of land and location
Infrastructure and land area	<ul style="list-style-type: none"> - Transport seen as 'just another land use' - Transport land uses connect up contiguously and connect all other land uses
The professional dimension	<ul style="list-style-type: none"> - Land use planning and transport planning are distinct professions - These may be integrated, fail to connect or be in conflict
The policy dimension	<ul style="list-style-type: none"> - Overall objectives of land use planning and transport planning are often similar with differences in detail or emphasis - Land use planning and transport planning policies may be disparate or integrated

Tab.1 Perspective on Land Use and Transportation

2.3 CHOICES OF RESIDENTIAL LOCATION INFLUENCES TRAVEL BEHAVIOR

The choice of a residential location is actually a cluster of related choices, including the decision to move from existing residence, the choice of housing tenure (rental or owned), neighborhood and housing unit. According to Hensher (2001), households with higher incomes, with children or with two workers, for example, will demonstrate different consumption preferences for housing and location than households of differing income and life cycle characteristics. This was further explained by Susilo et al., (2012) that it is very difficult to make comparison because the local context plays significant role and it is so critical.

Curtis (1996) explained that accessibility to the workplace is equally important with accessibility to other destinations, but in reasons for eventual choice of area accessibility to the workplace was less important. According to Scheiner (2010), the importance of access to the workplace is used as an indicator of location preferences, while in the maintenance activity model, the importance of proximity to shopping for a location decision is used.

Job location is treated as substitution between market work, household work and leisure based on the relative productivity in market work over the life cycle. Hensher (2001) explains that occupations chosen are more generic and low wage, but where there are more accessible opportunities and lower risk of unemployment or maybe highly specialized and high wage but may involve longer commuters or offer limited mobility.

Urban form has an extremely complex relationship indicating that land use and design proposals will influence the price of travel, travel modes, mixed-use, pedestrian-friendly movement and types of housing especially to support low income workers (Boarnet & Crane (2001), Cervero (2002), Dieleman et al. (2002), Naees (2009) and Cao et al. (2009) suggests that activity participation, location of activities, choices of travel and route choice have a significance says on travel behavior, regardless of any self-selection of residents to particular types of neighborhoods.

Mokhtarian and Cao (2008) explained on individual characteristics, like social-demographic are more straightforward to measure, where these variables added to the explanation of variation in travel behavior by individual characteristics. The inclusion of purpose of trip to different places or destinations is well highlighted by Kenyon and Lyons (2003), where they explained that majority of journeys is made with no choice. Lee (2002) has seen before examined this before where travel habits are formed and indeed car dependence becomes more deeply embedded.

Car availability is measured as an independent variable in order to explain travel behavior (Acker & Witlox, 2010). Scheiner also measured the data as an ordinal variable, which can take on four values; no car in the household, car in the household not available to the respondent, car in the household partly available and car in the household available at any time. Owning a car enable people to move or travel, which distance does not a matter to consider choosing the residential location.

In the current debate of the choices of residential location preferences, many studies have made efforts to address the self-selection issues by accounting for preferences and attitudes with physical and activities within and outside the neighborhood. Therefore, this study is crucial to include the social aspects of people within the neighborhood. It is possible to explore the relationship or understand such as religious and culture aspects of residents in the neighborhood yet to establish the connection with choices of residential location preferences.

2.4 OVERVIEW OF PREVIOUS TRAVEL BEHAVIOR STUDIES

The majority of the previous researches as reported in journals have been gathered primary data through the implementation of questionnaire survey or a travel diary. However, the complexity of the relationship between the built environment and travel behavior means that there is still considerable gaps and disagreement to some extent, particularly on residential self-selection. Kitamura et. al (1997) discussed on attitudes and travel behavior in which attitude contributes to the explanatory power of regression models, where it explains the number of trips, transit trips and non-motorized trips and the share of auto, transit and non-motorized trips. Besides that, socio-economic factors and neighborhood descriptors of parking space available, distance to the nearest bus stop, and distance to nearest park.

Naess (2005) identified attitudes towards environmental issues are not significant. In his study, the density variable is positively correlated. Furthermore, in addition to socio-economic characteristics and attitudes, residential location also influences travel behavior. In separate study conducted in 2006, (Naess, 2006), the multiple regression analysis have been carried out to explain commuting distance identified the similar results, with again a significant influences of attitudes towards car use and no significant influence of attitudes on environmental issues. Meanwhile, the first study on residential self-selection included attitudes, which used Structural Equation Modelling, was carried out by Bagley and Mokhtarian (2002). Among the variables that have been used are built environmental variables, the attitudinal factors 'pro-high density', 'pro-driving' and 'pro-transit'.

Besides that, Handy et al. (2005) and Cao et al. (2007) as reported by Bohte (2009) as well, have used quasi-longitudinal data to compare neighborhood characteristics and travel behavior before and after shifted to the new area. Handy et al. (2005) explained vehicle miles driven, travel-attitudes, neighborhood characteristics and preferences and socio-demographic variables, suggests that differences between travel behavior of residents in traditional neighborhood and residents in suburban neighborhood are more a function of travel-related preferences than neighborhood characteristics. Another important research that has been referred widely was from Abrahamse et al. (2009). The research discussed on factors influencing car use for commuting and the intention to reduce it. The researchers examined whether environmentally relevant behavior would be better explained by variables reflecting self-interest or by moral considerations and whether perceived behavioral control would moderate the relation between personal norms as well as the intention to reduce car use.

There have been many researches on the determinant of travel behavior in general, and particularly, on trip distance, especially for the past several years (Scheiner, 2010). The directions of the research in travel behavior has been dramatically changed, where socio-demographic differential of travel has been challenged by lifestyle-oriented approaches that claim to be more appropriate in individualized, affluent societal contexts

where people have more options to choose in their travel behavior (Scheiner and Kasper 2003), (Scheiner, 2010). Table 2 below shows the summary of previous research on built environment and travel behavior studies, which is adopted from Curtis & Perkins (2006).

Authors, Year and Method	Travel Behavior Variables	Neighborhood Spatial Variables	Attitudinal variables	Results
Kitamura et al., (1997); <i>Multiple regression analysis</i>	Trip frequency, transit trip frequency, transit trip share, non-motorized trip frequency, car trip share, non-motorized trip share	Distance to nearest bus stop and grocery shop, mixed land use, high density, perceptions of neighborhood quality; good local transit, no reason to move, streets pleasant for walking	Pro-environment, pro-transit, suburbanite, automotive mobility, time pressure, urban villager, TCM, workaholic	Socio-economic and neighborhood characteristics – travel behavior, but attitudes had a stronger influence on travel behavior
Bagley & Mokhtarian (2002); <i>Structural Equation Modelling (SEM)</i>	Vehicles miles, transit miles, walk/bike miles	Commute distance, home size, distance to nearest grocery store, average speed limit, grid street system, population density	Pro-alternative, pro-drive alone, pro-environment, pro-growth, time-satisfied, work-driven, pro-high density, pro-transit.	Attitudes and lifestyle – travel behavior, neighborhood characteristics had little impact on travel behavior.
Van Wee et al., (2002); <i>Multiple regression analysis</i>	Car trip frequency, distance by car, Public transport trip frequency, bicycle trip frequency, distance by public transport	Commute distance, distance to railway station, distance to social recreation destinations	Preferred travel mode	Travel mode preferences – residentially choice regarding public transportation
Cao et al., (2007); <i>Quasi – longitudinal, SEM</i>	Driving, walking, car ownership	Accessibility to various land use activities, perceptions of neighborhood characteristics; accessibility, physical activities options, safety, socializing, attractiveness and outdoor spaciousness	Pro-travel, pro-transit, pro-bike/walk, travel minimizing, safety of car, car dependent, accessibility, physical activity options, safety, socializing, attractiveness and outdoor spaciousness	Attitudes, neighborhood characteristics and preferred neighborhood characteristics influence travel behavior
Scheiner and Holz-Rau (2007); <i>Structural Equation Modelling</i>	Modal share	Density of supply, quality of public transport, vehicle kilometers travelled, density and mixed land use	Lifestyle factor out-of-home self-realization, accessibility to city centre, proximity to public transportation	Attitudes, lifestyles and residential location – travel behavior
Abrahamse et al., (2009); <i>Multiple Regression Analysis</i>	Gender, age, households size, travel mode, work period, employment, travel mode	travel distance	Intention to reduce car use, attitude toward car use, subjective norm (SN), perceived behavioral control (PBC), personal norm (PN), awareness of	Car use for commuting was mostly explained by variables related to individual outcomes (perceived behavioral control and attitudes), whereas the

			consequences (AC), ascription of responsibility (AR)	intention to reduce car use was mostly explained by variables related to morality (personal intention to reduce car use was mostly explained by variables related to morality (personal norms).
Scheiner (2010); <i>Standardized household survey; Structural Equation Modelling</i>	Travel mode choice, car availability, gender, age, number of children in the household, total household size, education level, income, employment	Accessibility, travel preference, mix-land use, compact city, Trip distance; Job trip distance, maintenance trip distance, leisure trip distance	Accessibility, lifestyle (out-of-home leisure preferences), values, life aims, aesthetic taste, individual location preferences	Trip distance is strongly influenced by social status. Subjective side of social status long been neglected in transport studies. Neither lifestyles nor location preferences have a strong impact on trip distances, except for leisure activities.
Aditjandra, P. T. et al., (2012); <i>Structural Equation Modelling</i>	Socio- demographics, changes in income, changes in household size, car ownership	Shopping accessibility, travel accessibility	Pro-public transport, pro-walking, dislike- cycling, positive utility of travel	Changes in socio- demographic characteristics are the main contributors to changes in car ownership.

Tab.2 Overview of Previous Research Findings

3 METHODOLOGY

The methodology used in this research responds to the issues and aims to explore the relationships between people's residential preferences and travel behavior with a case study of on Iskandar Malaysia region. The objectives of the study presented here were, first, to confirm the role of attitudes and preferences in explaining the link between residential location selection and travel behavior. Secondly, to directly construct the factors that influence people decision on residential location selection preferences (Fig.2).

3.1 SURVEY METHOD AND STUDY AREAS

Survey techniques are based on the use of structured questionnaires given to a sample of population. According to Hair et al. (2003), survey method have several advantages, such as the ability to accommodate large sample sizes and distinguish small differences, the increased generalizability of results, the convenience of managing and recording questions and answers, the capability of using statistical analysis and the ability to tap into factors and relationships not directly measure. The data used in this paper were collected in a standardized household survey within the objectives of this research.

The survey was carried out in 2 study areas in the region of Iskandar Malaysia, which is in Pasir Gudang Municipal Council (PGMC-Eastern Gate Development flagship) and Johor Bahru Tengah Municipal Council (JBTCM-Western Gate Development and Nusajaya flagships) (Fig.3).

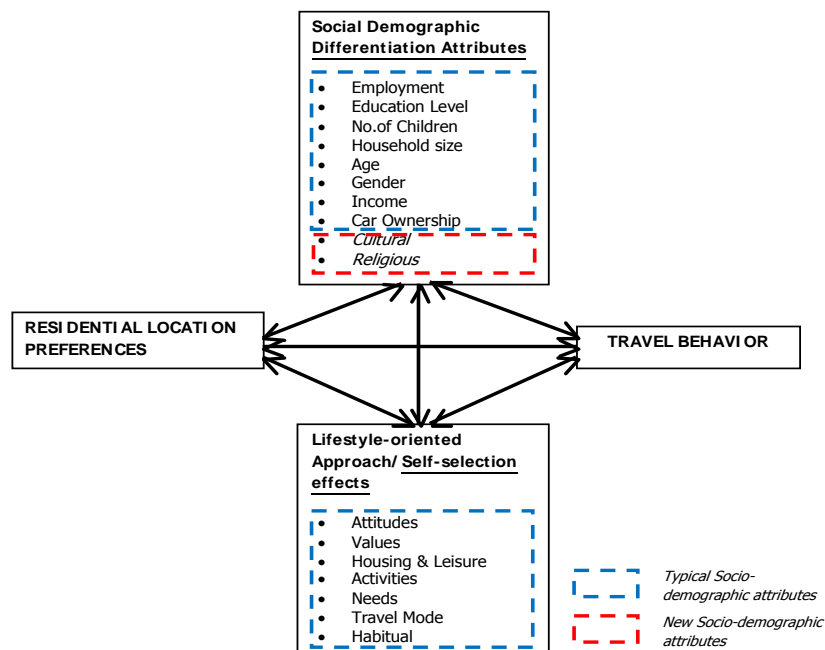


Fig.2 Methodology framework: the inclusion of cultural and religious aspects

The selections of these areas are based on three dimensions, which are, neighborhood type, land use and economic activities. Neighborhood type was differentiated as Johor Bahru Tengah Municipal Council area built more recent, while Pasir Gudang Municipal Council area mostly cover residential area built in the early 90's. While for land use and economic activities, PGMC mostly involve in industrial and services activities, which provide more job opportunities and for JBTCM are very much related to government offices and commercial. Nonetheless, spatially or socially 'extreme' areas were not purposely targeted.



Fig.3 Flagship zones within Iskandar Malaysia

3.2 SAMPLE POPULATION

In this research, cluster and stratified sampling were used in order to ensure sample characteristics are representative of the total population, where attention is paid to the group belongs to working group with the minimum age for attitudes research is 18-years old and above or considerably as an active working group. The questionnaires were only distributed to the head of household who are working, be in the government, non-government or self-employed and was carried out for a month in both study areas.

This paper studied 384 respondents (PGMC-19% & JBTMC-81%) who are an active working group. When working with samples, it is desirable to identify the sample represents the population to understand whether results might be generalized to that population or geographical background.

However, since the focus of the study is on explaining the relationships of social variables on residential selection preferences towards travel behavior, these differences are not expected to materially affect the results.

3.3 QUESTIONNAIRE DEVELOPMENT AND VARIABLES

The questionnaire was constructed largely using the findings from previous research on travel behavior, among others, are from Handy (2005), Aditjandra (2012), Acker & Wiltox (2010), Scheiner (2010) and Anable (2005). Besides that, feedback from focus group discussion that have been carried out with a group of people working with private and government sector are also taken into consideration. Input from them involved matter related to current neighborhood environment and also their preferences or choices of selecting residential area.

The questionnaires captured respondents' socio-demographic data, namely, gender, age, races, religion background, length of stay, economic status, education background, household income, household size, number of children, tenure status, possession on vehicles and also mode of transportation to activities related to work and non-work trips. Likert-type answer scales were measured for 87 statements. The statements were divided into two sections which are current neighborhood characteristics (39 statements) and also attitudes and preferences for residential location (48 statements).

Variables used in the analysis include characteristics of the current residential or neighborhood area and also respondents' residential location preferences. Travel behavior was variously measured through a series of questions on work trips, non-work trips and also distance travelled to workplace. In addition, respondents were asked to list vehicles currently available in their house or to the household. Detail of variables used can be referred in the results section.

3.4 STATISTICAL ANALYSIS

This paper used Reliability Analysis and Factor Analysis to identify the correlated variables and to create a set of factor constructs. The reliability of the scales is considered in connection with measurement models. Reliability was assessed using Cronbach's alpha coefficient (α), which is the commonly used measure of reliability. 87 statements or items were subjected to reliability analysis and, eventually, only 72 statements were found to have sufficient internal reliability ($\alpha > 0.7$) to be subsequently used in the Factor Analysis. Thus, Factor Analysis identified the latent variables or constructs underlying the 27 statements or items on current neighborhood characteristics and the 33 statements or items on attitudes and preferences of residential locations. This is called as latent constructs or latent variables.

The criterion "*Eigenvalue* > 1" was used to determine the number of factors. Through this analysis, several factors were extracted and are shown in the next section of this paper.

4 RESULTS

The data for the analyses were collected in MPPG and MPJBT. These areas were chosen because they were assumed to differ in terms of their spatial or physical environment, economy activities, and status of housing areas in terms of year of built. Furthermore, the land use activities are more varied and these were assumed to be best area for data collections. Table 3 below shows the distribution of ethnics group in the study area and also the district statistic data. Overall, the data has been represented by ethnic group.

Characteristics	Study Area		District	
	MPPG	MPJBT	MPPG	MPJBT
Size Population	73	311	46,571	529,074
Ethnic group (%)				
<i>Malay</i>	78	54	91	39
<i>Chinese</i>	11	32	3	47
<i>Indian</i>	10	13	5	13
<i>Others</i>	1	1	1	1

Tab.3 Sample characteristics of population

4.1 MODEL CONSTRUCTION ISSUES

The factor analysis concluded that several factors or constructs in current neighborhood characteristics and preferences for residential location shows that new perspective in determining the factors with latent variables that never been covered before in the Western country as well as other Asia countries. By virtue of the factors construct procedure and its use of latent variables created by the factor analysis, each of the factor group or matrix has been given a name to represent its characteristics. These labels are revealed in Table 4 and Table 5 together with the latent factors loading.

Previous research has well documented that residential choices are mainly made with consideration heavily given to physical aspects of the built environment, including activities, socio-demographic background as well as car availability (Aditjandra, 2012) (Acker & Witlox, 2010). It was proven in this research that to certain aspect of society in certain areas, culture and religious aspects influenced their decision on selecting residential location.

NEIGHBORHOOD CHARACTERISTICS FACTORS	STATEMENTS	FACTOR LOADINGS*
<i>Pro-culture within neighborhood</i>	Respect different languages within neighborhood	0.773
	Accept the smell of neighbor cook and meals	0.670
	Low racists remarks	0.613
	Less misunderstanding with neighbors regardless of races	0.607
	Less attendance in religious activity	0.481
	'Guarded and gated' in mix-racial community area	0.504
		0.383
<i>Safety and security</i>	Comfortable to walk within neighborhood area	0.676
	Safe for children to play outdoor	0.573
	Low crime rate within neighborhood area	0.571
	Low level of car traffic on neighborhood streets	0.569
<i>Built-environment</i>	Local shops within walking distance	0.602

accessibility	Easy access to shopping centre	0.601
	Easy to workplace	0.539
	Easy access to public transport facilities	0.465
Neighborhood Attractiveness	Green environment	0.536
	Less environment conflict	0.485
	Well-kept properties	0.476
	Away from busy streets	0.470
Religious practice	Respect neighbor from different religion listening to religious songs	0.780
	Respect prayers performing by neighbor from different religion	0.667
Social status	Religious centre nearby	0.698
	Diverse religious practice among residents	0.609
	Diverse neighborhood	0.351
Neighborhood choice and involvement	Variety of house	0.550
	Visit neighbor functions	0.489
Neighborhood Facilities	Parking facilities	0.566
	Bicycle lane facilities	0.531
	Recreational area nearby	0.418

**Factor loadings represent the degree of association between the statements and the factors. Extraction Method: Principal Axis Factoring (PAF). Rotation Method: Varimax with a Kaiser Normalization Rotation converged in 19 iterations.*

Tab. 4 Factors of current neighborhood characteristics

NEIGHBORHOOD CHARACTERISTICS FACTORS	STATEMENTS	FACTOR LOADINGS
Religious Practice	Diverse religious practice	0.756
	Many religious practice nearby	0.754
	Don't mind with prayers performed by neighbor from different races	0.689
	Frequent religious preaching	0.688
	Don't mind with neighbor from different religion listening to religious songs	0.587
Residential Location	Local shops within walking distance	0.714
	Easy access to workplace is an important factor	0.633
	Easy access to worship or religious centre	0.626
	Easy access to shopping centre	0.519
	Easy walking routes throughout the neighborhood	0.480
	Sufficient parking facilities are the main priority	0.432
	Prefer park and recreational area	0.377
Neighborhood Attractiveness	Adequate house space	0.771
	Affordable house	0.708
	Green environment	0.547
	Mix-land use	0.454
Travel Behavior	Prefer to walk rather than drive whenever possible	0.917
	Prefer to cycle rather than driving whenever possible	0.719
	Walking is easier than driving	0.653
Pro-Public Transport	I prefer to take public transport rather than driving	0.727
	Most of the time, I will travel by public transport	0.719
	Public transport operate on regular basis	0.560
	Public transport routes cover my residential area	0.447

Safety	Safe for children to play outdoor	0.789
	Comfort to walk	0.707
	Low level of car traffic	0.455
Socio-culture	Less conflict among races are an important consideration	0.696
	Do not mind with different language within neighborhood	0.490
	Interaction among neighborhood are very good	0.435

**Extraction Method: Principal Axis Factoring (PAF) Rotation Method: Varimax with a Kaiser Normalization Rotation converged in 6 iterations.*

Tab.5 Factors for residential location preferences

5 DISCUSSION

5.1 THE NEW PERSPECTIVE ON RESIDENTIAL PREFERENCES

Neighborhood characteristics and residential location preferences indicates and reflects fundamental differences from the previous research or studies. The comparison of respondent's perceived neighborhood characteristics for their current residence and their preferences for neighborhood characteristics indicates how well their current neighborhood meets their preferences.

Nevertheless, the findings have shown that culture and religious plays such a significant role in respondent's decisions in residential location selection.

This study, though, enhance our understanding of the complicated and comprehensive relationships among residential location preferences, attitudes toward land use, travel and transportation.

We have investigated to what extent respondent's preference differs not only by residential neighborhood, but also by the present and level of mismatch their preference on neighborhood environments and surroundings.

The survey largely indicates that consideration on religious practice was among the important factor that has been considered in respondent's decision on residential location selection. In the previous studies, physical formed of consideration have been given importance.

However, in this study, social status is considerably among the highest and correlated with residential location selection preferences. These findings add a different perspective on travel behavior studies before, which are heavily dominated by researches from Western Europe, North America and Australasia.

The factor analysis produced many undiscovered issues in social context by other researchers. This, perhaps, will bring new perspective of travel behavior studies where transport researchers need reject universal conclusions and be clearer about the contexts in which their findings most apply.

So far, the findings generally confirm standard knowledge and findings in residential location considerations and travel behavior studies. Turning our attention to social status and aspects, it was found that social contexts to be the major impact for residential location preferences. In Malaysia context, social contexts among Malaysian appear to be very strong preference.

The findings add new knowledge to the previous research that found land uses, facilities and accessibility are much correlated with residential location selection preferences (Schwanen and Mokhtarian (2005), Handy et al. (2005), Scheiner (2010), Aditjandra et al. (2012).

Travel behavior studies shows that the importance to understand the local context should be extended to the difference perspective, such as their cultural values, religious practices, lifestyles and even food that they consumes.

These have been proven through this empirical study, which identified that religious preaching, language spoken and also religious center will be taken into consideration.

Hence, the research indicates that residential location preferences choices requires a unique, expanded of existing version of travel behavior studies incorporating social aspects to improve and enhance the current framework in this context.

More sophisticated analyses of these data, such as structural equations modelling (SEM), will help to establish the strength and direction of residential location preferences and its relationship with travel behavior. For instant, the factor analysis helps to identify the relevant latent constructs on current neighborhood characteristics and eventually, on their preferences (Aditjandra et al., 2012).

Future studies that adopt research designs that more or less resemble this study will provide more evidence on this empirical result.

Further studies and experimentation like relationship between latent variables and further exploration on how these latent variables relates to travel behavior decision process are needed to illuminate the complex and comprehensive relationships and their implications for policy and planning. Nevertheless, this study has seen the difference context of residential location and travel behavior studies.

The results presented here provide some encouragement that land-use policies designed to put residents closer to destinations will actually need to be given more considerations and deep understanding on people's social status and preferences.

What lessons for policymaking can be drawn from this study? Policies that could attract people to shift near to their workplace, especially in the new areas including mix-religious institutions that allow people to move within or closer to their respective residential area.

Although this study does not discuss on the policies aspects context, though it provides evidence that such considerations are very significance in multi-racial countries.

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REFERENCES

- Abrahamse, W., Steg, I., Gifford, R, Vlek, C. (2009), 'Factor Factors influencing car use for commuting and the intention to reduce it: A question of self-interest or morality' *Transport Research Part F* 12, 317-324.
- Aditjandra, P.T. (2008), 'The Relationship Between Urban Form And Travel Behavior: A Micro-Analysis In Tyne And Wear'. PhD Thesis, School of engineering and Geoscience, Newcastle University, UK
- Aditjandra, P.T., Cao, EJ and Mulley, C. (2012), 'Understanding Neighborhood Design Impact On Travel Behavior: An Application of Structural Equation Model to A British Metropolitan Data'. *Transportation Research Part A*. 46, 22-32.
- Anable, J. (2005), 'Complacent Car Addicts' or 'Aspiring Environmentalist'? Identifying travel behavior segments using attitude theory. *Transport Policy* 12 (2005), 65-78
- Boarnet, M. G. and Crane, R. (2001), 'The Influences of Land Use On Travel Behavior: Empirical Strategies' *Transportation Research Part A*, 35, 823-845.
- Bohte, W., Maat, K. and Wee, B.V. (2009), 'Measuring Attitudes In Research on Residential Self-Selection and Travel Behavior: A Review On Theories and Empirical Research' *Transport Reviews*, 29 (3), 325–357.
- Cao, X., Mokhtarian, P. and Handy, S. (2007), 'Do Changes In Neighborhood Characteristics Lead To Changes In Travel Behavior? A Structural Equations Modeling Approach' *Transportation*, 34 (5), 535-556.

- Cao, X., Mokhtarian, P. and Handy, S. (2009), 'The relationship between the built environment and non-work travel: A case study of Northern California' *Transportation Research A*, 43, 548-559.
- Cervero, R. (2002), 'Built environments and mode choice: Toward a normative framework' *Transportation Research D*, 7, 265-284.
- Curtis, C. and Perkins, T. (2006), 'Travel Behavior: A Review of Recent Literature' Working Paper No.3, Urban Net.
- Dieleman, F.M., Dijst, M and Burghouwt, G. (2002), 'Urban Form and Travel Behavior: Micro-Level Household Attributes and Residential Context' *Urban Studies*, 39 (3), 507-527.
- Handy, S. (1996), 'Methodologies for exploring the link between urban form and travel behavior' *Transportation Research D* 1, 151-165.
- Handy, S., Cao, X. and Mokhtarian, P. (2005), 'Correlation or causality between the built environment and travel behavior? Evidence from Northern California' *Transportation Research D*, 10, 427-444.
- Ho, C.S, Simson, J., Matsuoka, Y, and Gomi, K. (2012), 'Low Carbon Urban Development Strategy In Malaysia - The Case Of Iskandar Malaysia Development Corridor' *Habitat International*, 1-9.
- IRDA. (2010), 'Iskandar Malaysia Blueprint Report'.
- Kitamura, R., Mokhtarian, P. L. and Laidet, L. (1997), 'A micro-analysis of land use and travel in five neighborhoods in San Francisco Bay Area' *Transportation*, 24, 125-158.
- Mahmassani, H.S. (2002), ' in Perpetual Motion. Travel Behavior Research Opportunities and Application Challenges' Book Review. 8th Meeting of the International Association for Travel Behavior Research, Austin, Texas, US. Marshall, S. (2005), 'Streets and Patterns' London and New York, Spon Press.
- Mokhtarian, P. L. and Cao, X. (2008), 'Examining The Impacts of Residential Self-Selection on Travel Behavior: A Focus On Methodologies' *Transportation Research Part B*, 42, 204-228.
- Naess, P. (2005), 'Residential location affects travel behavior—But how and why? The case of Copenhagen metropolitan area' *Progress in Planning*, 63, 167-257.
- Naess, P. (2009), 'Residential Self-Selection and Appropriate Control Variables in Land Use: Travel Studies' *Transport Reviews*, 29, 293-324.
- Scheiner, J. (2010), ' Social Inequalities In Travel Behavior: Trip Distances In The Context Of Residential Self-Selection And Lifestyles ' *Journal of Transport Geography*, 18, 679 – 690.
- Scheiner, J. and Kasper, B. (2003), ' Lifestyles, Choices of Housing Location and Daily Mobility: The Lifestyle Approach In The Context of Spatial Mobility and Planning ' *International Social Science Journal*, 55 (176), 319 – 332.
- Schwanen, T. and Mokhtarian, P.L (2005a), ' What Effects Commute Mode Choice: Neighborhood Physical Structure Or Preferences Toward Neighborhoods? *Journal of Transport Geography* 13 (1), 83 – 99.
- Sinniah, G.K., Zaly Shah, M., Ho, C. S. (2013), ' The needs for changes in travel behavior towards a low carbon society' *American International Journal of Contemporary Research*, Vol.3 No.3, March.
- Susilo, Y. O and Dijst, M. (2009), 'How Far Is Too Far? Travel Time Ratios For Activity Participations In The Netherlands' *Transportation Research Record*, 2134, 89 – 98.
- Susilo, Y.O., Williams, K., Lindsay, M. and Dair, C. (2012), ' The Influence Of Individuals' Environmental Attitudes And Urban Design Features On Their Travel Patterns In Sustainable Neighborhoods In The UK ' *Transportation Research Part D*, 17, 190-200.
- Van Acker, V., Witlox, F., Wee, Bv. (2007), ' The Effects of The Land Use System on Travel Behavior: A Structural Equation Modeling Approach ' *Transportation Planning and Technology*, 30 (4), 331-353.

IMAGE SOURCES

All the Tables and figures are elaborated by the Authors, except: Cover Image: <http://www.commonswikimedia.org>; Tab.1: Adopted from Marshall and Banister (2007); Fig.3: Iskandar Regional Development Authority, 2010.

AUTHOR'S PROFILE

Gobi Krishna Sinniah

Ph.D. candidate in Transportation Planning, Department of Urban and Regional Planning, Faculty of Built Environment.

Muhammad Zaly Shah

Senior Lecturer in the Dept. of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia
Head, Logistics and Transportation Laboratory, Faculty of Built Environment.

Geoff Vigar

Professor of Urban Planning at Newcastle University.

Paulus Teguh Aditjandra

Research Associate with NewRail-Centre for Railway Research, School of Mechanical and systems Engineering, Newcastle University.